

# Optical Properties of Mexico City Aerosols: Field and Laboratory Studies

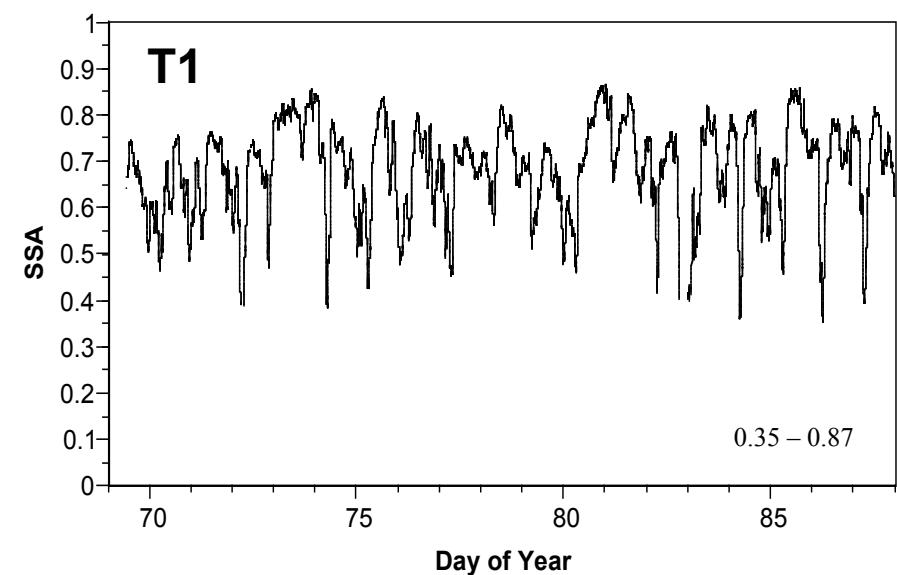
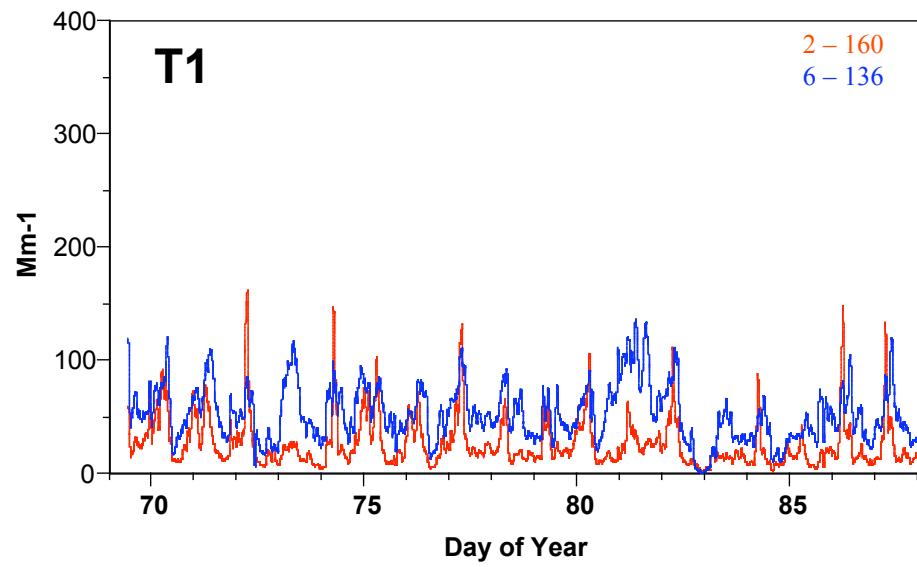
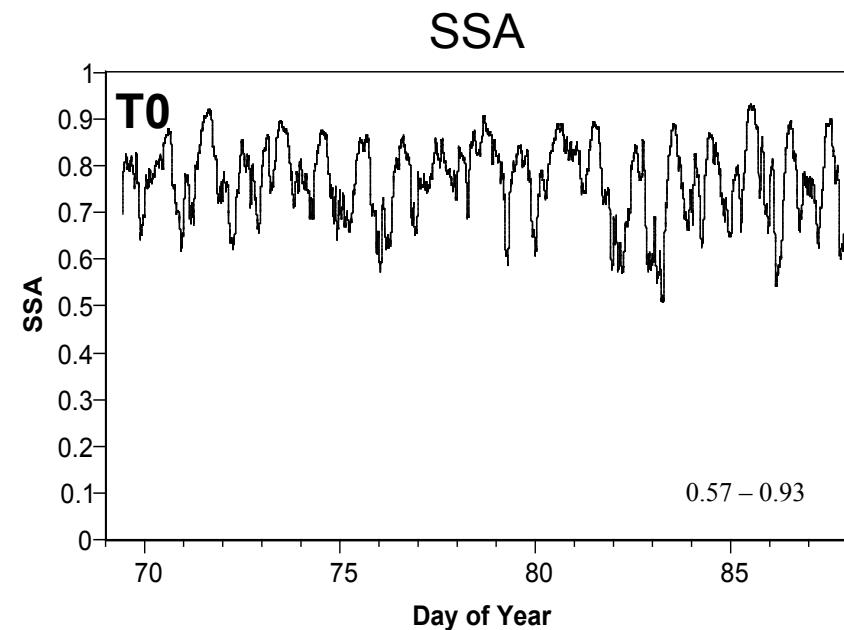
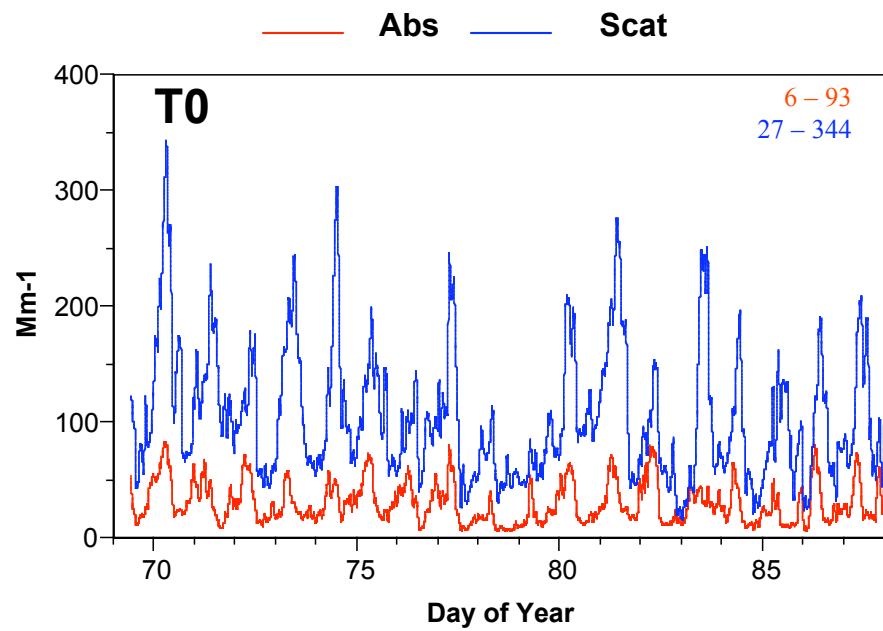


Nancy A. Marley

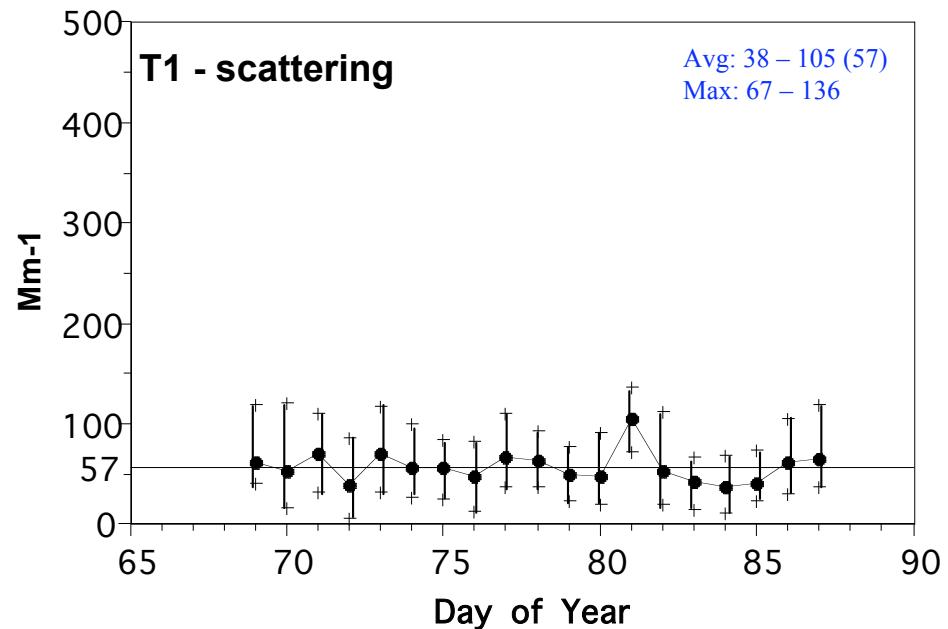
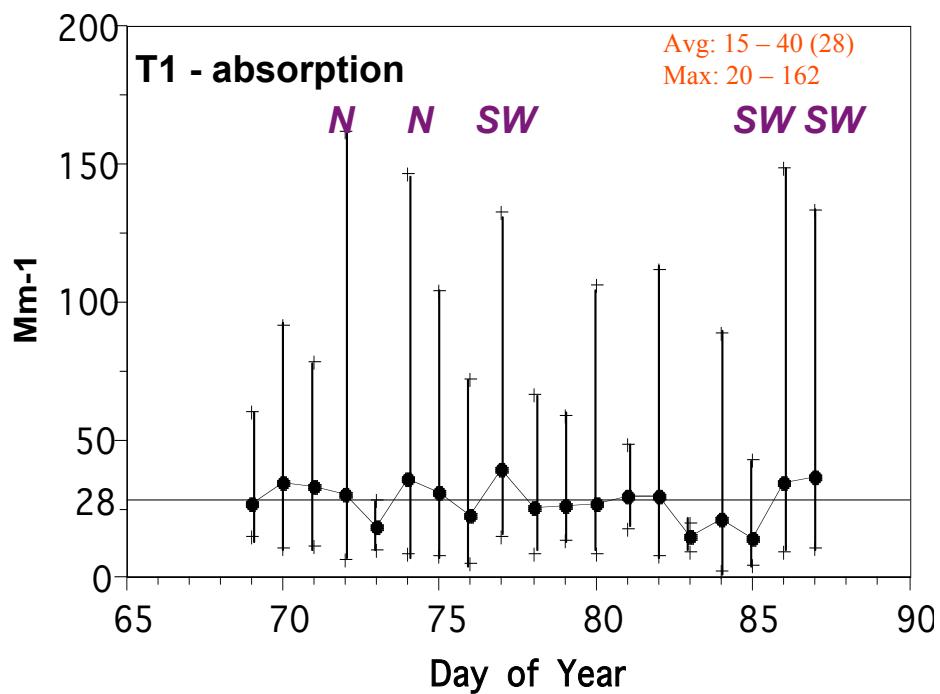
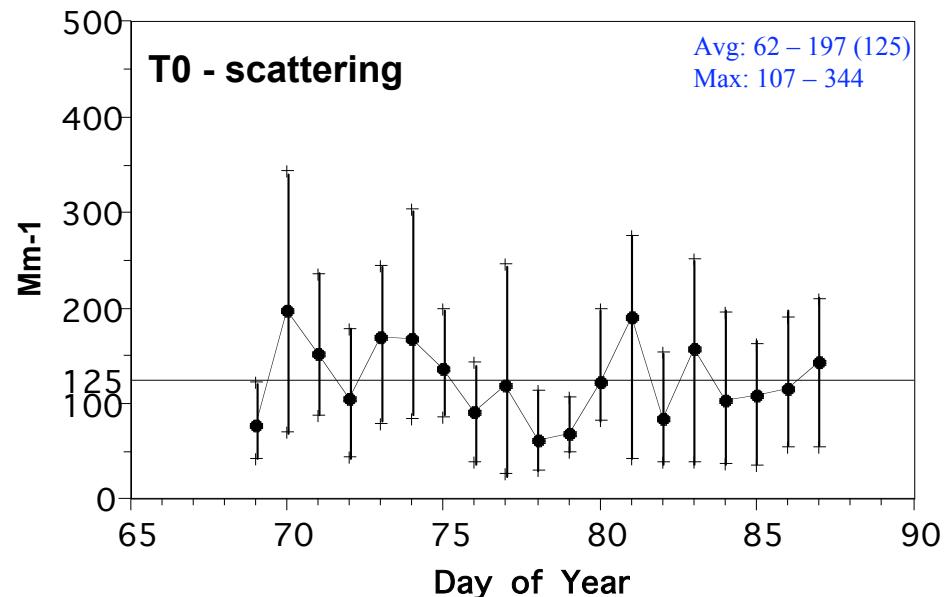
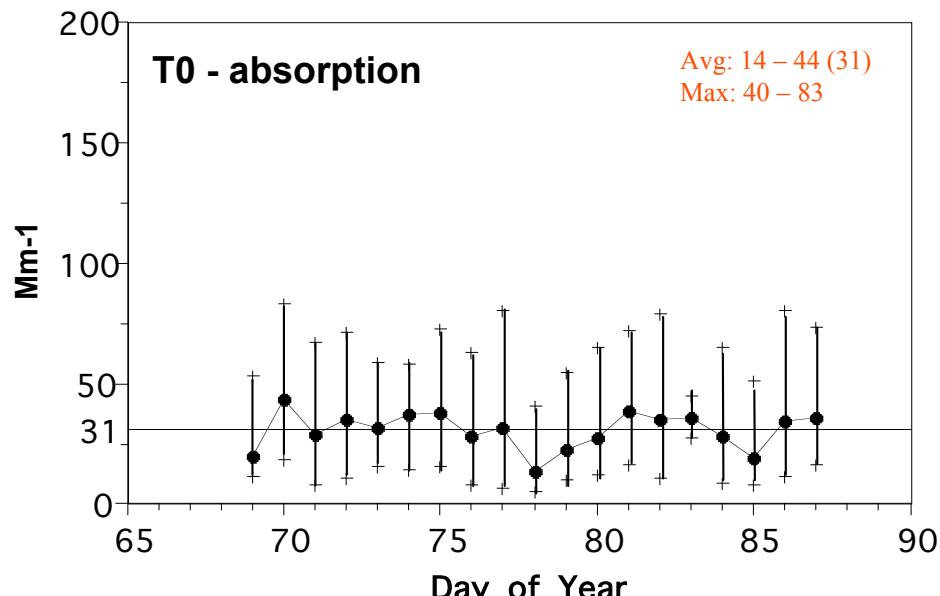
- 1. Comparison of aerosol optical properties at T0 and T1.**  
Absorption, Scattering, SSA, field measurements  
(Telma Castro, UNAM, at T1)
  
- 2. UV-Visible absorption profiles of T0 and T1 aerosols.**  
12-hour samples obtained in the field  
Laboratory measurements by integration sphere spectroscopy
  
- 3. FTIR spectral characterization of T0 and T1 aerosols.**  
12-hour samples obtained in the field  
Laboratory measurements by diffuse reflectance spectroscopy



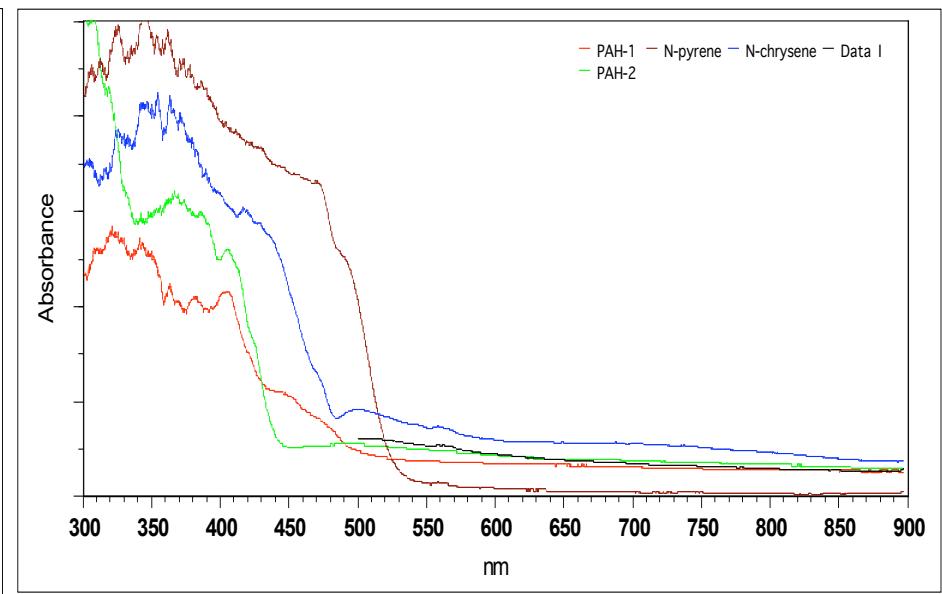
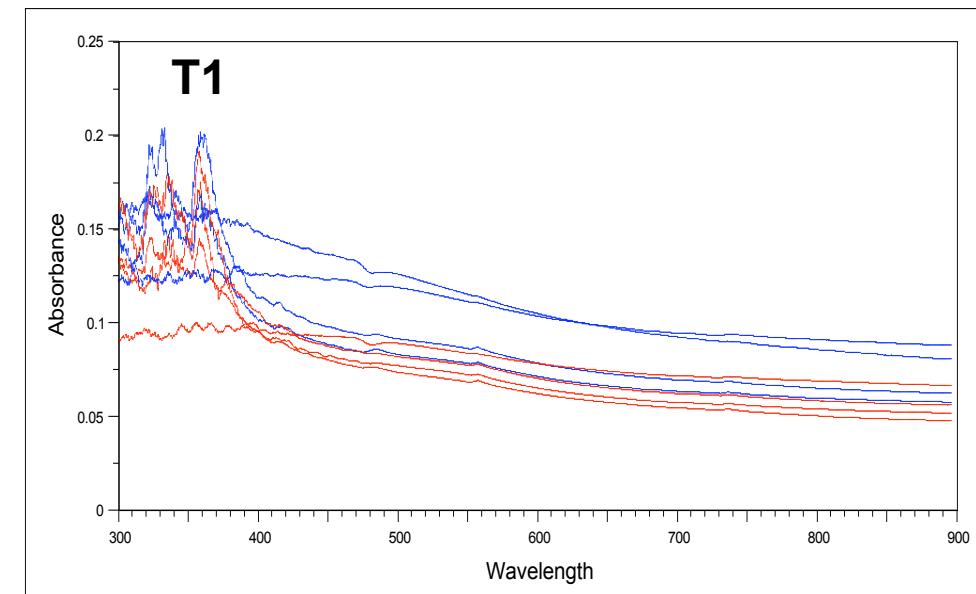
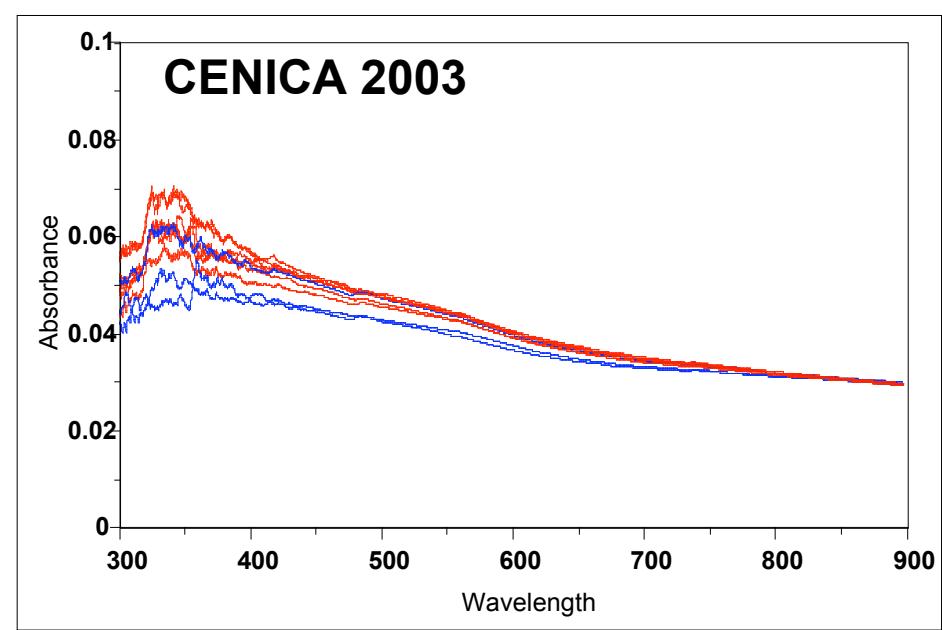
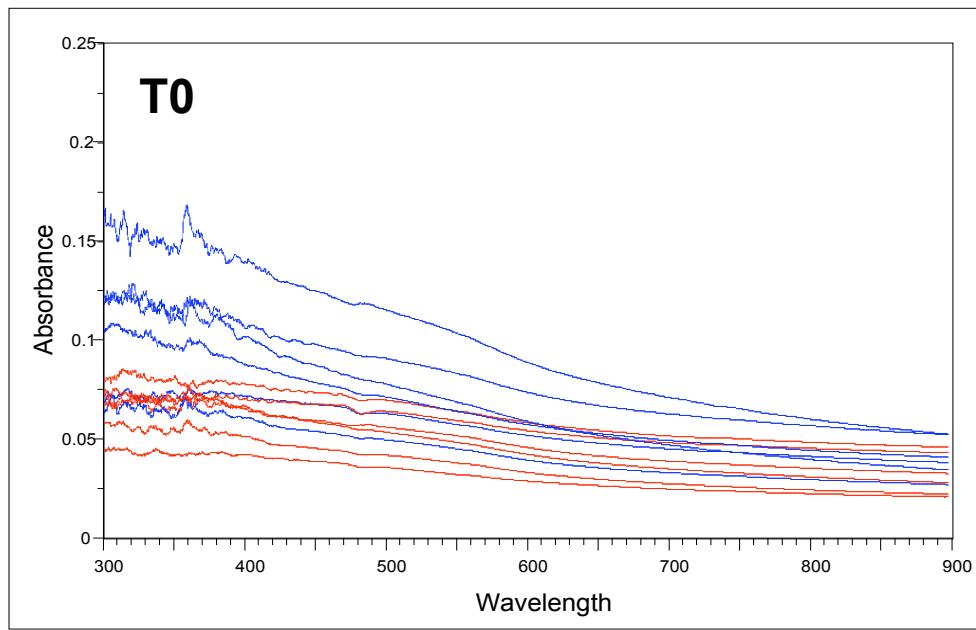
## Comparison of Aerosol Optical Properties at T0 and T1



Averaged over daylight hours – to corresponding to the back trajectories calculated by Doran et al.  
*(Atmos. Chem. Phys. 7, 1585-1598)*

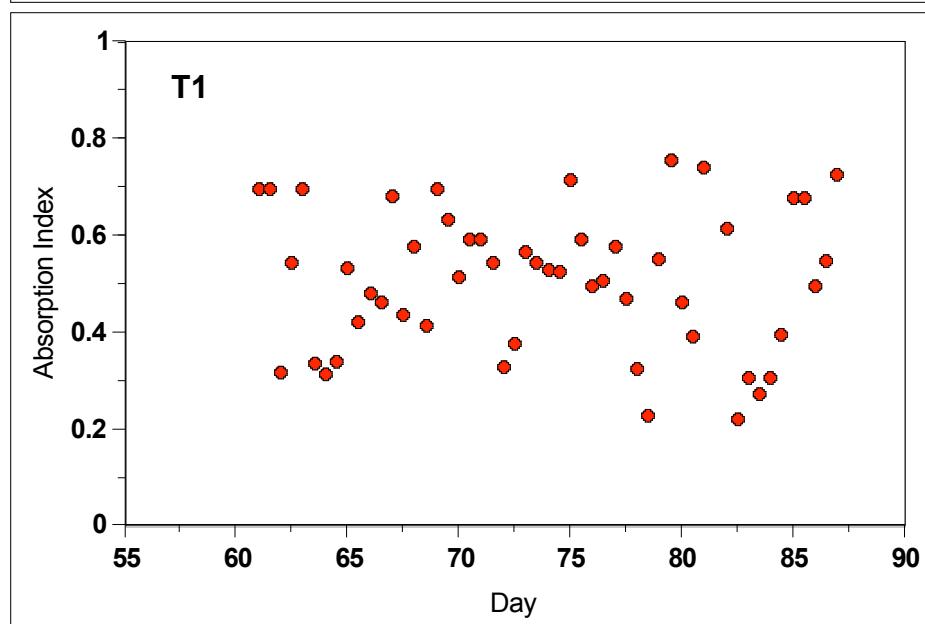
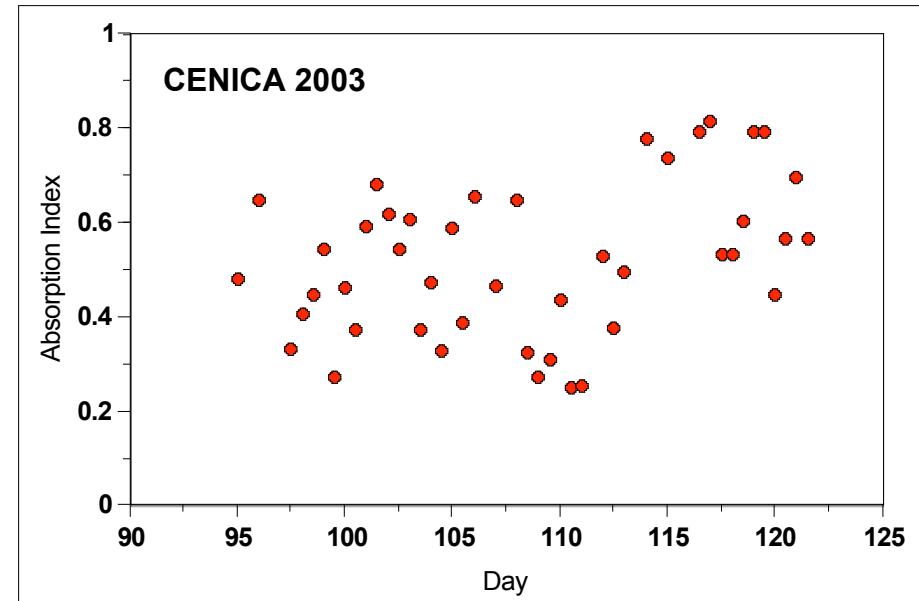
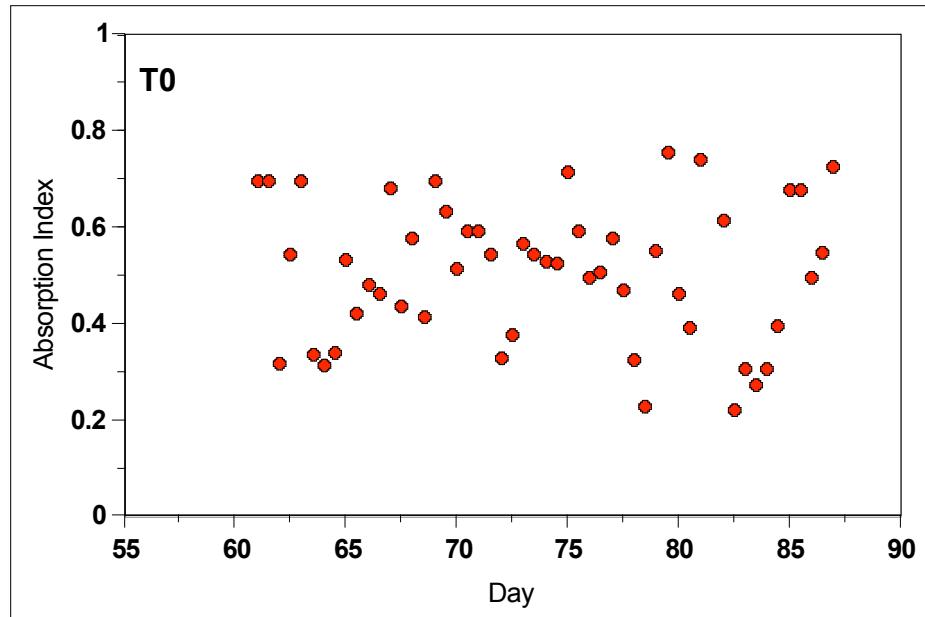


# UV-Visible Spectra of T0 and T1 Aerosol Samples Using Integration Sphere Spectroscopy



# Aerosol Absorption Index Calculated at 550 nm

Marley et al., 2001. *Aerosol Sci. Technol.* 34, 535–549.



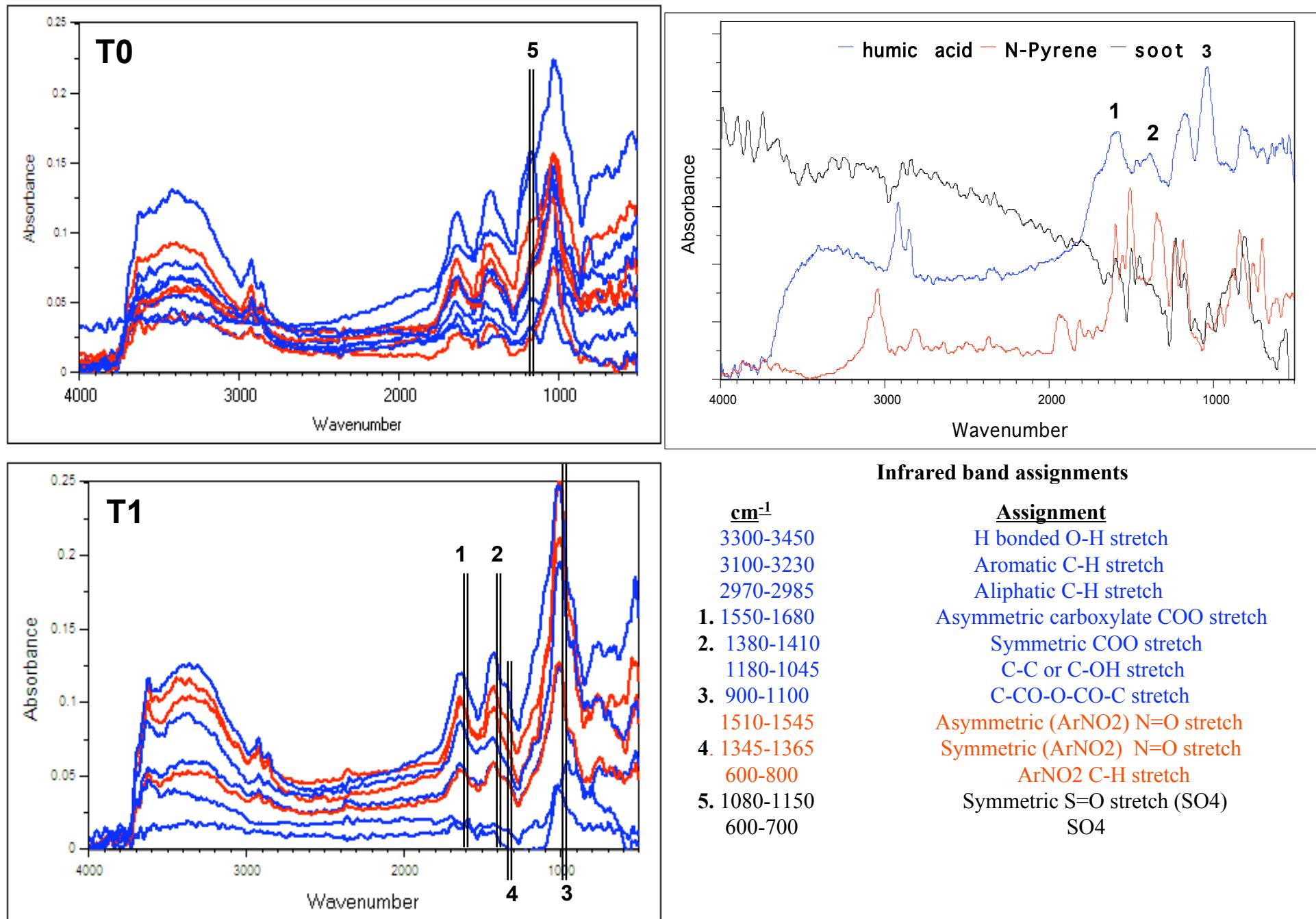
$$n = 1.64 - 1.69 \text{ (1.67)}$$

$$F(R) = K/S = (1-R^2)/2R = (8/3) \text{ (k/s)} \\ 2n$$

$$S = \frac{1}{(n^2 + 1)} = 0.88$$

$$k = 0.58 - 0.54 \\ 0.32 - 0.34$$

## FTIR Spectra of T0 and T1 Aerosol Samples by Diffuse Reflectance



1. Comparison of T0 and T1 Aerosol Optical Properties  
- Draft to be Submitted to ACPD-
  
2. UV-Visible Spectra of T0 and T1 Aerosol Samples  
Quantitative determination of aerosol mass specific absorption coefficients as a function of time
  
3. FTIR Spectra of T0 and T1 Aerosol Samples  
Quantitative determination of Carboxylate content as a function of time.  
  
Study changes in aerosol surface chemistry with time  
- Environmental chamber –
  
4. Correlate spectral changes with C-14 and C-13 results to determine the extent of biomass burning to aerosol absorption and changes in surface chemistry.

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